



## Appendix A. Radiated Spurious Emission

|                 |            |                     |         |
|-----------------|------------|---------------------|---------|
| Test Engineer : | Donny Pang | Temperature :       | 22~24°C |
|                 |            | Relative Humidity : | 47~50%  |

15C 2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

| BT                    | Note                                                                                        | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Cable  | Preamp | Ant    | Table   | Peak    | Pol.    |
|-----------------------|---------------------------------------------------------------------------------------------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
|                       |                                                                                             | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| BT<br>CH00<br>2402MHz |                                                                                             | 2342.63   | 45.64      | -28.36 | 74         | 42.24    | 31.91    | 6.14   | 34.65  | 116    | 148     | P       | H       |
|                       |                                                                                             | 2342.63   | 20.91      | -33.09 | 54         | -        | -        | -      | -      | -      | -       | A       | H       |
|                       | *                                                                                           | 2402      | 88.59      | -      | -          | 85.08    | 31.94    | 6.21   | 34.64  | 116    | 148     | P       | H       |
|                       | *                                                                                           | 2402      | 63.86      | -      | -          | -        | -        | -      | -      | -      | -       | A       | H       |
|                       |                                                                                             |           |            |        |            |          |          |        |        |        |         |         | H       |
|                       |                                                                                             |           |            |        |            |          |          |        |        |        |         |         | H       |
|                       |                                                                                             | 2353.42   | 45.92      | -28.08 | 74         | 42.51    | 31.92    | 6.14   | 34.65  | 325    | 274     | P       | V       |
|                       |                                                                                             | 2353.42   | 21.19      | -32.81 | 54         | -        | -        | -      | -      | -      | -       | A       | V       |
|                       | *                                                                                           | 2402      | 85.13      | -      | -          | 81.62    | 31.94    | 6.21   | 34.64  | 325    | 274     | P       | V       |
|                       | *                                                                                           | 2402      | 60.4       | -      | -          | -        | -        | -      | -      | -      | -       | A       | V       |
|                       |                                                                                             |           |            |        |            |          |          |        |        |        |         |         | V       |
|                       |                                                                                             |           |            |        |            |          |          |        |        |        |         |         | V       |
| Remark                | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |           |            |        |            |          |          |        |        |        |         |         |         |



| BT                     | Note                                                         | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Cable  | Preamp | Ant    | Table   | Peak    | Pol.    |
|------------------------|--------------------------------------------------------------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
|                        |                                                              |           |            | Limit  | Line       | Level    | Factor   | Loss   | Factor | Pos    | Pos     | Avg.    |         |
|                        |                                                              | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| BT<br>CH 39<br>2441MHz |                                                              | 2323.3    | 44.94      | -29.06 | 74         | 41.59    | 31.9     | 6.1    | 34.65  | 113    | 120     | P       | H       |
|                        |                                                              | 2323.3    | 20.21      | -33.79 | 54         | -        | -        | -      | -      | -      | -       | A       | H       |
|                        | *                                                            | 2441      | 90.69      | -      | -          | 87.09    | 31.97    | 6.27   | 34.64  | 113    | 120     | P       | H       |
|                        | *                                                            | 2441      | 65.96      | -      | -          | -        | -        | -      | -      | -      | -       | A       | H       |
|                        |                                                              | 2491.83   | 44         | -30    | 74         | 40.29    | 32       | 6.34   | 34.63  | 113    | 120     | P       | H       |
|                        |                                                              | 2491.83   | 19.27      | -34.73 | 54         | -        | -        | -      | -      | -      | -       | A       | H       |
|                        |                                                              | 2367.76   | 45.22      | -28.78 | 74         | 41.78    | 31.92    | 6.17   | 34.65  | 350    | 269     | P       | V       |
|                        |                                                              | 2367.76   | 20.49      | -33.51 | 54         | -        | -        | -      | -      | -      | -       | A       | V       |
|                        | *                                                            | 2441      | 87.26      | -      | -          | 83.66    | 31.97    | 6.27   | 34.64  | 350    | 269     | P       | V       |
|                        | *                                                            | 2441      | 62.53      | -      | -          | -        | -        | -      | -      | -      | -       | A       | V       |
|                        |                                                              | 2492.02   | 44.3       | -29.7  | 74         | 40.59    | 32       | 6.34   | 34.63  | 350    | 269     | P       | V       |
|                        |                                                              | 2492.02   | 19.57      | -34.43 | 54         | -        | -        | -      | -      | -      | -       | A       | V       |
| BT<br>CH 78<br>2480MHz | *                                                            | 2480      | 88.28      | -      | -          | 84.62    | 31.99    | 6.3    | 34.63  | 110    | 121     | P       | H       |
|                        | *                                                            | 2480      | 63.55      | -      | -          | -        | -        | -      | -      | -      | -       | A       | H       |
|                        |                                                              | 2483.5    | 50.25      | -23.75 | 74         | 46.59    | 31.99    | 6.3    | 34.63  | 110    | 121     | P       | H       |
|                        |                                                              | 2483.5    | 25.52      | -28.48 | 54         | -        | -        | -      | -      | -      | -       | A       | H       |
|                        |                                                              |           |            |        |            |          |          |        |        |        |         |         | H       |
|                        |                                                              |           |            |        |            |          |          |        |        |        |         |         | H       |
|                        | *                                                            | 2480      | 80.73      | -      | -          | 77.07    | 31.99    | 6.3    | 34.63  | 353    | 270     | P       | V       |
|                        | *                                                            | 2480      | 56         | -      | -          | -        | -        | -      | -      | -      | -       | A       | V       |
|                        |                                                              | 2484.18   | 44.93      | -29.07 | 74         | 41.27    | 31.99    | 6.3    | 34.63  | 353    | 270     | P       | V       |
|                        |                                                              | 2484.18   | 20.2       | -33.8  | 54         | -        | -        | -      | -      | -      | -       | A       | V       |
|                        |                                                              |           |            |        |            |          |          |        |        |        |         |         | V       |
|                        |                                                              |           |            |        |            |          |          |        |        |        |         |         | V       |
| Remark                 | 1. No other spurious found.                                  |           |            |        |            |          |          |        |        |        |         |         |         |
|                        | 2. All results are PASS against Peak and Average limit line. |           |            |        |            |          |          |        |        |        |         |         |         |



## 15C 2.4GHz 2400~2483.5MHz

## BT (Harmonic @ 3m)

| BT                     | Note                                                                                        | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Cable  | Preamp | Ant    | Table   | Peak    | Pol.    |
|------------------------|---------------------------------------------------------------------------------------------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
|                        |                                                                                             |           |            | Limit  | Line       | Level    | Factor   | Loss   | Factor | Pos    | Pos     | Avg.    |         |
|                        |                                                                                             | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| BT<br>CH 00<br>2402MHz |                                                                                             | 4803      | 36.45      | -37.55 | 74         | 54.44    | 34.35    | 8.52   | 60.86  | 100    | 0       | P       | H       |
|                        |                                                                                             | 4803      | 11.72      | -42.28 | 54         | -        | -        | -      | -      | -      | -       | A       | H       |
|                        |                                                                                             |           |            |        |            |          |          |        |        |        |         |         | H       |
|                        |                                                                                             |           |            |        |            |          |          |        |        |        |         |         | H       |
|                        |                                                                                             | 4803      | 36.22      | -37.78 | 74         | 54.21    | 34.35    | 8.52   | 60.86  | 100    | 0       | P       | V       |
|                        |                                                                                             | 4803      | 11.49      | -42.51 | 54         | -        | -        | -      | -      | -      | -       | A       | V       |
|                        |                                                                                             |           |            |        |            |          |          |        |        |        |         |         | V       |
|                        |                                                                                             |           |            |        |            |          |          |        |        |        |         |         | V       |
| BT<br>CH 39<br>2441MHz |                                                                                             | 4881      | 36.01      | -37.99 | 74         | 53.53    | 34.4     | 8.77   | 60.69  | 100    | 0       | P       | H       |
|                        |                                                                                             | 4881      | 11.28      | -42.72 | 54         | -        | -        | -      | -      | -      | -       | A       | H       |
|                        |                                                                                             | 7323      | 40.44      | -33.56 | 74         | 53.29    | 35.73    | 11.95  | 60.53  | 100    | 0       | P       | H       |
|                        |                                                                                             | 7323      | 15.71      | -38.29 | 54         | -        | -        | -      | -      | -      | -       | A       | H       |
|                        |                                                                                             | 4881      | 35.68      | -38.32 | 74         | 53.2     | 34.4     | 8.77   | 60.69  | 100    | 0       | P       | V       |
|                        |                                                                                             | 4881      | 10.95      | -43.05 | 54         | -        | -        | -      | -      | -      | -       | A       | V       |
|                        |                                                                                             | 7323      | 40.1       | -33.9  | 74         | 52.95    | 35.73    | 11.95  | 60.53  | 100    | 0       | P       | V       |
|                        |                                                                                             | 7323      | 15.37      | -38.63 | 54         | -        | -        | -      | -      | -      | -       | A       | V       |
| BT<br>CH 78<br>2480MHz |                                                                                             | 4959      | 37.48      | -36.52 | 74         | 54.47    | 34.47    | 9.02   | 60.48  | 100    | 0       | P       | H       |
|                        |                                                                                             | 4959      | 12.75      | -41.25 | 54         | -        | -        | -      | -      | -      | -       | A       | H       |
|                        |                                                                                             | 7440      | 40.18      | -33.82 | 74         | 53.04    | 35.71    | 12.01  | 60.58  | 100    | 0       | P       | H       |
|                        |                                                                                             | 7440      | 15.45      | -38.55 | 54         | -        | -        | -      | -      | -      | -       | A       | H       |
|                        |                                                                                             | 4959      | 37.39      | -36.61 | 74         | 54.38    | 34.47    | 9.02   | 60.48  | 100    | 0       | P       | V       |
|                        |                                                                                             | 4959      | 12.66      | -41.34 | 54         | -        | -        | -      | -      | -      | -       | A       | V       |
|                        |                                                                                             | 7440      | 40.53      | -33.47 | 74         | 53.39    | 35.71    | 12.01  | 60.58  | 100    | 0       | P       | V       |
|                        |                                                                                             | 7440      | 15.8       | -38.2  | 54         | -        | -        | -      | -      | -      | -       | A       | V       |
| Remark                 | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |           |            |        |            |          |          |        |        |        |         |         |         |



## 15C Emission below 1GHz

## 2.4GHz BT (LF)

| BT                 | Note                                                                       | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Cable  | Preamp | Ant    | Table   | Peak    | Pol.    |
|--------------------|----------------------------------------------------------------------------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
|                    |                                                                            |           |            | Limit  | Line       | Level    | Factor   | Loss   | Factor | Pos    | Pos     | Avg.    |         |
|                    |                                                                            | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| 2.4GHz<br>BT<br>LF |                                                                            | 34.05     | 16.99      | -23.01 | 40         | 31.22    | 16.88    | 0.68   | 31.79  | -      | -       | P       | H       |
|                    |                                                                            | 132.6     | 18.48      | -25.02 | 43.5       | 37.27    | 11.68    | 1.28   | 31.75  | -      | -       | P       | H       |
|                    |                                                                            | 146.64    | 23.27      | -20.23 | 43.5       | 42.87    | 10.82    | 1.33   | 31.75  | -      | -       | P       | H       |
|                    |                                                                            | 480.6     | 27.22      | -18.78 | 46         | 39.51    | 17.31    | 2.31   | 31.91  | -      | -       | P       | H       |
|                    |                                                                            | 779.5     | 26.17      | -19.83 | 46         | 35.17    | 19.9     | 3.06   | 31.96  | -      | -       | P       | H       |
|                    |                                                                            | 907.6     | 32.35      | -13.65 | 46         | 39.94    | 20.5     | 3.37   | 31.46  | 100    | 111     | P       | H       |
|                    |                                                                            |           |            |        |            |          |          |        |        |        |         |         | H       |
|                    |                                                                            |           |            |        |            |          |          |        |        |        |         |         | H       |
|                    |                                                                            |           |            |        |            |          |          |        |        |        |         |         | H       |
|                    |                                                                            |           |            |        |            |          |          |        |        |        |         |         | H       |
|                    |                                                                            |           |            |        |            |          |          |        |        |        |         |         | H       |
|                    |                                                                            | 34.05     | 23.93      | -16.07 | 40         | 38.16    | 16.88    | 0.68   | 31.79  | 100    | 122     | P       | V       |
|                    |                                                                            | 41.34     | 21.63      | -18.37 | 40         | 40.57    | 12.1     | 0.75   | 31.79  | -      | -       | P       | V       |
|                    |                                                                            | 67.26     | 21         | -19    | 40         | 45.69    | 6.16     | 0.92   | 31.77  | -      | -       | P       | V       |
|                    |                                                                            | 776       | 22.35      | -23.65 | 46         | 31.4     | 19.86    | 3.06   | 31.97  | -      | -       | P       | V       |
|                    |                                                                            | 867       | 24.38      | -21.62 | 46         | 32.4     | 20.37    | 3.28   | 31.67  | -      | -       | P       | V       |
|                    |                                                                            | 937       | 25.94      | -20.06 | 46         | 33.1     | 20.67    | 3.36   | 31.19  | -      | -       | P       | V       |
|                    |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
|                    |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
|                    |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
|                    |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
|                    |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
|                    |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
|                    |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
| Remark             | 1. No other spurious found.<br>2. All results are PASS against limit line. |           |            |        |            |          |          |        |        |        |         |         |         |

**Note symbol**

|     |                                                                                                                                                                        |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| *   | <b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency per 15.209(c). |
| !   | Test result is <b>over limit</b> line.                                                                                                                                 |
| P/A | <b>Peak</b> or <b>Average</b>                                                                                                                                          |
| H/V | <b>H</b> orizontal or <b>V</b> ertical                                                                                                                                 |



A calculation example for radiated spurious emission is shown as below:

| WIFI    | Note | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Cable  | Preamp | Ant    | Table   | Peak    | Pol.    |
|---------|------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| Ant.    |      |           |            | Limit  | Line       | Level    | Factor   | Loss   | Factor | Pos    | Pos     | Avg.    |         |
| 1+2     |      | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| 802.11b |      | 2390      | 55.45      | -18.55 | 74         | 54.51    | 32.22    | 4.58   | 35.86  | 103    | 308     | P       | H       |
| CH 01   |      |           |            |        |            |          |          |        |        |        |         |         |         |
| 2412MHz |      | 2390      | 43.54      | -10.46 | 54         | 42.6     | 32.22    | 4.58   | 35.86  | 103    | 308     | A       | H       |

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

**For Peak Limit @ 2390MHz:**

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

**For Average Limit @ 2390MHz:**

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

**Both peak and average measured complies with the limit line, so test result is “PASS”.**